



# ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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PAT QUINN, GOVERNOR

217/524-3300

September 30, 2011

CERTIFIED MAIL

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BFI Waste Systems of North America, LLC  
Attn: Bryan Zimmerman  
26 W 580 Shick Road  
Hanover Park, Illinois 60103

Veolia ES Zion Landfill, Inc.  
Attn: James M. Reavy  
701 Green Bay Road  
Zion, Illinois 60099

Re: 0978020001 -- Lake County  
Zion Site 1 Landfill  
ILD980700728  
Log No. B-23R  
RCRA Administrative Record

Dear Mr. Zimmerman and Mr. Reavy:

Attached is a renewed RCRA Hazardous Waste Management Post-Closure Permit which requires BFI Waste Services of North America, LLC (BFI) to carry out post-closure care of a closed 40-acre landfill at the above-referenced facility located at 701 Green Bay Road, Zion, Illinois. This landfill, referred to as Phase A, received mainly non-hazardous waste but also accepted some hazardous waste. Read this permit carefully. Failure to meet any portion of the permit could result in civil and/or criminal penalties.

The final permit decision is based on the administrative record contained in the Illinois Environmental Protection Agency's files which includes the draft renewed permit issued for public comment on May 26, 2011, the application submitted by BFI to renew the subject facility's RCRA permit and comments received from the public regarding the afore-mentioned draft permit. The contents of the administrative record are described in 35 Illinois Administrative Code (Ill. Adm. Code) Section 705.211. It must be noted that a RCRA permit had previously been issued to this facility on April 5, 1988.

The only comments received on the draft permit issued for public comment on May 26, 2011, were submitted by Michael B. Maxwell, LPG. and Elizabeth A. Steinhour, Weaver Boos Consultants on behalf of BFI; a response to these comments prepared by Illinois EPA is attached. The response to comments document also identifies any changes made to the draft permit in response to BFI's comments.

This action shall constitute Illinois EPA's final permit decision on the application mentioned above. Within 35 days after the notification of a final permit decision, the permittee may petition the Illinois Pollution Control Board to contest the issuance of the RCRA permit issued by the Illinois EPA. The petition shall include a statement of the reasons supporting a review, including

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Bureau of Land – Peoria • 7620 N. University St., Peoria, IL 61614 • (309) 693-5462

Collinsville • 2009 Mall Street, Collinsville, IL 62234 • (618) 346-5120

Des Plaines • 9511 W. Harrison St., Des Plaines, IL 60016 • (847) 294-4000

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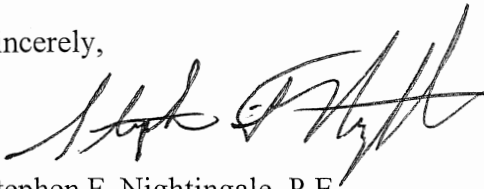
Mr. Zimmerman and Mr. Reavy  
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demonstration that any issues raised in the petition, were previously raised during the public comment period. In all other respects the petition shall be in accordance with the requirements for permit appeals as set forth in 35 Ill. Adm. Code Part 105. Nothing in this paragraph is intended to restrict appeal rights under Section 40(b) of the Environmental Protection Act (35 Ill. Adm. Code 705.212(a)).

Work required by this permit, your application or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. This permit does not relieve anyone from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

If you have any questions concerning the groundwater related aspects of this permit, please contact Paula Stine of my staff at 217/524-3861. If you have questions regarding other aspects of this permit, please contact James K. Moore, P.E. at 217/524-3295.

Sincerely,



Stephen F. Nightingale, P.E.  
Manager, Permit Section  
Bureau of Land

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Attachments: Response to Comments on Draft Renewed RCRA Permit  
Final RCRA Renewal Permit

cc: Jim Hitzeroth, BFI  
USEPA Region V  
Weaver Boos Consultants

**Response to Public Comments and Revisions Made to the Draft Renewed RCRA Permit  
Issued to the Zion Site 1 Landfill in Zion, Illinois  
Log No. B-23R**

1.0 Introduction/Purpose

Illinois EPA issued a RCRA permit for the Zion Site 1 Landfill in Zion, Illinois on April 5, 1988 which contained requirements associated with the proper management of hazardous waste in a landfill at the facility. On May 26, 2011, Illinois EPA issued a public notice indicating that a draft renewed RCRA permit for this facility had been prepared for public comment. This draft permit contained requirements regarding post-closure care of the now-closed 40-acre landfill at this facility which received mainly hazardous waste but also some hazardous waste.

The comment period for the afore-mentioned draft renewed RCRA permit began on May 26, 2011 and ended on July 11, 2011. The only comments Illinois EPA received on the draft permit were submitted July 11, 2011 on behalf of BFI by Michael B. Maxwell, LPG and Elizabeth A. Steinhour of Weaver Boos Consultants. In accordance with 35 Ill. Adm. Code 705.210, this document provides in Section 2.0 below a response to BFI's comments and also identifies any resulting changes made to the draft permit in the development of the final renewed permit to be issued to the facility.

2.0 Response to Comments and Associated Changes Made to the Draft Permit

BFI's comments were based on specific portions or conditions of the draft permit. Thus, each portion/condition of concern is identified sequentially below, followed by the re-iteration of each comment. Illinois EPA's response to each comment is then provided after each comment is stated; any changes made to the draft permit in response to the comment are also identified.

1. Comment Regarding the Cover Page of the Permit: The duration of a RCRA post-closure permit can be a maximum of ten years pursuant to 35 Ill. Adm. Code (IAC) 702.161. Accordingly, Weaver Boos requests that the expiration date of the permit be ten years from the effective date.

Illinois EPA Response: The final renewed RCRA permit issued for this facility will be effective for ten years and this information will be contained on the signature page of the permit.

2. Comment Regarding Section I – General Facility Description (Page I-2 of I-2): The “74.38 acre solid waste disposal site” referenced in the first paragraph on this page is believed to be east of Phase I, rather than west.

Illinois EPA Response: The comment is correct and the identified text will be revised to indicate the 74.38 acre landfill permitted by BFI in 1981 is located east of the Phase A landfill.

3. Comment Regarding Section III-Post Closure, Item E.2: Gas monitoring within the waste boundary will be accomplished by surface scanning along a predetermined grid, as described in the Gas Monitoring Plan Zion Landfill is permitted under Title V of the Clean Air Act, and currently operates an active gas extraction system under the NSPS. Each of the gas extraction wells are monitored on a monthly basis for gas content and pressure, and surface emissions are monitored quarterly, as described in the Gas Monitoring Plan included within the permit application. Build up of gases within the landfill is not allowed under NSPS, as all wells are required to maintain a negative pressure. Surface emissions monitoring is used to verify the proper operation of the extraction system and that the density of extraction wells is sufficient. Since the gas is being actively managed, and the system is monitored as required under the NSPS, no additional gas probes within the waste are believed to be necessary. Accordingly, permit condition III.E.2 is requested to be deleted. The reference to these three interior gas monitoring probes should also be removed from permit condition III.E.3.

Illinois EPA Response: Further communication with BFI also indicates that the methane levels above the landfill cap are checked quarterly as required by the facility's Title V Clean Air Act Permit. Based on this information, along with that provided in the comment, it does not appear as though the three additional gas probes within the landfill are needed and the permit will be modified accordingly. Thus, Condition III.E.2 will be removed from the permit – and the reference to interior gas probes will be removed from Condition III.E.3 of the draft permit. In addition, changes will be made to the remainder of subsection E to reflect the fact that Condition IV.E.2 in the draft permit had been removed and the remaining conditions need to be re-numbered.

4. Comment Regarding Section III – Post-Page Closure, Item G.1 on Page III-11: There is no regulatory basis for the requirement to maintain one foot of leachate in each extraction well. While 35 IAC 724.401(a) and 35 IAC 724.401(c)(2) reference a one foot leachate requirement, this specific facility is not subject to either 35 IAC 724.401(a) or (c)(2). Section 724.401(a) covers landfills not covered under subsection (c) (which covers Post-1992 landfill developments), except this regulation does not include “existing portions of such landfills”.

35 IAC 720.110 defines “existing portion” as that land surface area of an existing waste management unit, included in the original Part A permit application, on which wastes have been placed prior to the issuance of a permit. According to 35 IAC 720.110, “Existing hazardous waste management (HWM) facility” or “existing facility” means a facility that was in operation or for which construction commenced on or before November 19, 1980...

Based on 35 IAC 720.110, “In operation” refers to a facility that is treating, storing, or disposing of hazardous waste. Zion 1A began construction in 1976, and waste disposal operations commenced shortly thereafter. Based on this timing, Zion 1A therefore meets the above definition of “existing hazardous waste management facility” and therefore is not subject to the requirement to maintain one foot of leachate head above the liner.

Additionally, Zion 1A was originally designed with two trenches at the bottom of the landfill that captured leachate and gravity drained it to the manhole near the southwest corner of the facility. Leachate was then extracted from the manhole and hauled away to a permitted treatment, storage and disposal facility. Measures were taken to further enhance the leachate extraction system following closure of Zion 1A; however, the installation of a containment loadout area and above ground storage tank for collection of the hazardous waste leachate did not result in an expansion or change to the regulatory status of the landfill unit.

Moreover, the pumps installed in the leachate extraction wells and approved by the Illinois EPA are Hammerhead H Series pneumatic pumps. Pneumatic pumps are typically installed at least 1 foot above the bottom of each well in order to keep them above any mud and/or debris that collect in the well throughout the operating life. The actuation point on a pneumatic pump is typically 2 feet above the bottom of the pump, and is the minimum level that leachate must reach to activate the pump. The pneumatic pumps automatically turn on and pump once leachate reaches the actuation point within the well, and continues to pump as long as leachate is detected by the actuator. In addition, the gas extraction system creates a vacuum in each well which acts to increase the actuation level by a length equal to the vacuum in inches of water column. The use of pneumatic pumps effectively allows the continued removal of leachate and requires less maintenance and downtime than electric pumps.

Based on the above regulations, we suggest that this condition be replaced with the following language:

“The Permittee shall continue to operate the leachate collection and removal system throughout the post closure care period until pumpable quantities of leachate are not present.”

Similar language has been included in the RCRA post-closure permit for another closed hazardous waste landfill in Illinois with the same regulatory status. We believe similar language should be included in the Zion 1A Permit.

Illinois EPA Response: The information in the comment is well-founded. In addition, subsequent communications with the Permittee pointed out that the existing leachate management program must be functioning effectively, as the facility is implementing a detection monitoring program for groundwater. Such a program is associated with land disposal facilities where no release has been observed from the unit.

Given this information, as well as additional information which have been obtained regarding a manhole/sump located just outside the southwest corner of the landfill which receives leachate from the original leachate trenches originally constructed around the landfill's perimeter, the draft permit will be modified as follows:

- a. A new Condition III.G.2 will be added which states:

A manhole/sump is present just outside the southwest corner of the landfill which receives leachate from the original leachate trenches installed around the perimeter of the landfill's base. The bottom of this manhole/sump is at an elevation of approximately 726 MSL. A pump similar to that described above is present in the sump and its intake is located approximately one foot above the bottom of the manhole/sump.

- b. Conditions III.G.2 thru III.G.6 of the draft permit have been renumbered III.G.3 thru III.G.7 in the final permit.

- c. A new Condition III.G.8 is being added to the permit which states:

The Permittee shall continue to operate the leachate collection and removal system throughout the post-closure care period until pump able quantities of leachate are no longer present.

- d. It is important for the permit to indicate where the leachate extraction pumps are located in each well, when they begin to operate and when they stop operating. As such, the following text will replace the text in Condition III.G.1 of the draft permit:

The leachate pumps in the extraction wells identified in Condition III.D.5 above are located approximately one foot above the bottom of the screen of each well. These pumps automatically turn on when the leachate level is approximately 3.5 feet above the bottom of the pump.

5. Comment Regarding Section III – Post-Closure, Item III.G.3 (Page III-11) As described in the comment below regarding Condition III.G.7, the existing leachate extraction system was designed and installed to efficiently remove as much leachate as possible. Additionally, as detailed in Appendix B2 of Appendix D1 (Construction Completion Report) to the February 2011 supplement to the permit application, the Hammerhead pumps installed in the wells are each equipped with a QED Solo counter. As is done at many landfill sites, the existing counter devices are used to track individual pump operation and can also be used to calculate the amount of leachate removed from each well. These calculations are performed using the counter measurements at each well, together with the cumulative total of leachate removal over a specified time period, which is tracked by the total amount of leachate transported offsite during specified time periods.

To require the installation of flow meters on each well is unnecessary and costly. Landmarc Environmental has estimated a cost of approximately \$5,000 to install a flow meter on each well, which would total approximately \$120,000 (23 wells and the manhole). Weaver Boos believes tracking the pump counter and leachate collected within the AST and transported offsite provides the information necessary to determine whether increased leachate withdrawal is necessary from certain well(s). Information detailing the type of pumps installed on the wells and the counters was included in Appendix B2 of Appendix D1 of the February 2011 submittal.

Moreover, permittee is not aware of a specific regulatory requirement for the installation of flow meters, nor is it aware of another similar landfill facility where flow meters have been installed. Therefore, it is requested that this permit condition be deleted and/or modified to specify that the existing counter devices installed at each leachate extraction well will be sufficient to track the quantity of leachate removed.

Illinois EPA Response: The existing counter devices are sufficient to monitor the quantity of leachate removed from each extraction well. Thus, Condition III.G.3 of the draft permit (which is Condition III.G.4 in the final permit) will be revised to state:

The amount of leachate removed from each extraction well and the manhole/sump must be determined on a quarterly basis. This determination may be made using the counter devices associated with each extraction pump in conjunction with knowledge of the total amount of leachate removed during the quarter.

6. Comment Regarding Section III – Post-Closure, Item G.6 (Page III-12): Quarterly groundwater sampling has been conducted at Site 1A for many years. Based on the historic groundwater data, Site 1A has not exhibited any evidence of a groundwater impact from the landfill. Based on Weaver Boos' experience with Illinois EPA approved RCRA post-closure permits for other closed RCRA landfills in Illinois, an annual leachate sampling frequency is sufficient, rather than every six months. In the event future compliance groundwater monitoring is required, increasing the frequency of leachate sampling to semi-annually would be considered.

Illinois EPA Response: Given that this facility has been closed for thirteen years, the request to modify the detailed leachate sampling frequency in Condition III.G.6 of the draft permit (which is Condition III.G.7 in the final permit) to annually be acceptable and that condition will be modified accordingly.

7. Comment Regarding Section III – Post-Closure, Item G.7 (Page III-13): It is agreed that leachate removal is a critical component of post-closure care activities. The existing leachate removal system was designed and installed with the objective of achieving maximum leachate removal. It must be noted that due to the timeframe that this landfill was constructed, the specific elevations of the landfill bottom were not documented in as much detail as is required by current regulations. The bottom elevation of the landfill included in the permit application is a general range based on limited available documents that in many cases are over 30 years old.

Based on our review of the historical landfill construction information and information from BFI/Veolia personnel with knowledge of this facility, the landfill liner contains leachate collection trenches trending north-south that were designed to drain leachate generally to the south, where it accumulates in a sump and is ultimately pumped to the leachate storage tank via a forcemain. This design, along with the leachate extraction wells, is expected to effectively reduce leachate heads within the landfill. The extension of the existing wells is not



technically feasible, so new wells would have to be installed. Given the lack of information related to the specific elevation of the landfill bottom, permittee would be concerned that extension of the leachate extraction wells has the potential to penetrate the bottom of the landfill, which we believe would create a greater threat to human health and the environment, compared to the potential benefit of allowing for the extraction of additional leachate. Given the age of Site 1A, the installation of new wells to meet the one foot benchmark is not required.

Moreover, we believe the primary objective of the post-closure period to allow a landfill to stabilize to a point where it no longer presents a significant threat to human health or the environment and not necessarily to remove “all leachate” within the unit. Once the post-closure period ends, we expect that the permittee will petition to terminate the post-closure period, and at that time, we anticipate the Illinois EPA will conduct a review to determine if the permittee has satisfactorily demonstrated that the site has stabilized. The critical performance criteria used to evaluate the termination of post-closure is whether there are any increasing trends in the concentrations of constituents or exceedances of the groundwater standards, increasing trends or exceedances of methane concentrations, as well as increasing trends of leachate generation requiring removal from the system.

Based on the above, it is requested that this permit condition be deleted.

Illinois EPA Response: Further communication with BFI also indicates there have been no observed groundwater impacts since the leachate collection system has been in operation. This would indicate that the existing leachate collection system is operating effectively and that the requirements of Condition III.G.7 of the draft permit are not necessary and thus it was removed from the final permit.

8. Comment Regarding Section III – Post-Closure, Item H.8.b (Page III-14): The estimated quantity of leachate removed from each extraction well will be based on the counter readings and this data will be provided in the Annual Report.

Illinois EPA Response: As indicated above, Condition III.G.3 of the draft permit has been revised to indicate counters are acceptable equipment for determining the amount of leachate removed from each extraction well.

9. Comment Regarding Section IV-A –Shallow Zone Observation Monitoring, Item J (Page IV-A-12): The two items are numbered “4” and “2”, but should be changed to “1” and “2”.

Illinois EPA Response: This change was made.

10. Comment Regarding Section VIII – Reporting (Page VIII-1) As discussed above, the requirement to install flow rate recorders for the leachate extraction wells is proposed to be Notification removed and therefore this condition should also be removed.

Illinois EPA Response: This item has been deleted from Section VIII for as discussed in Item 5 above, this flow rate recorder is not necessary.

11. Comment Regarding Section VIII –Reporting and Notification Requirements, Condition G.7 (Page VIII-1) As discussed above, the requirement to update the leachate removal plan is requested to be deleted and therefore this condition should also be deleted.

Illinois EPA Response: This item has been deleted from Section VII as discussed in Item 7 above, such an updated plan is not necessary.